(54) **MULTICYCLE INTEGRATION FOCAL PLANE ARRAY (MIFPA) FOR LOCK-IN (LI-), GATED (G-), AND GATED LOCK-IN (GLI-) IMAGING, SPECTROSCOPY AND SPECTROSCOPIC IMAGING**

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(58) **Field of Search**

(56) **References Cited**

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(57) **ABSTRACT**

A new electronic apparatus multicycle integration focal plane array (MIFPA) is disclosed, wherein through correlated multicycle integration extremely weak signals buried in strong background can be detected for imaging, spectroscopy, and/or spectroscopic imaging applications. The MIFPA apparatus can operate in three modes — the lock-in (LI), gated (G), and gated lock-in (GLI) modes. The methods of operating LI-MIFPA, G-MIFPA, and GLI-MIFPAP modes comprising specific steps are also disclosed.

8 Claims, 11 Drawing Sheets